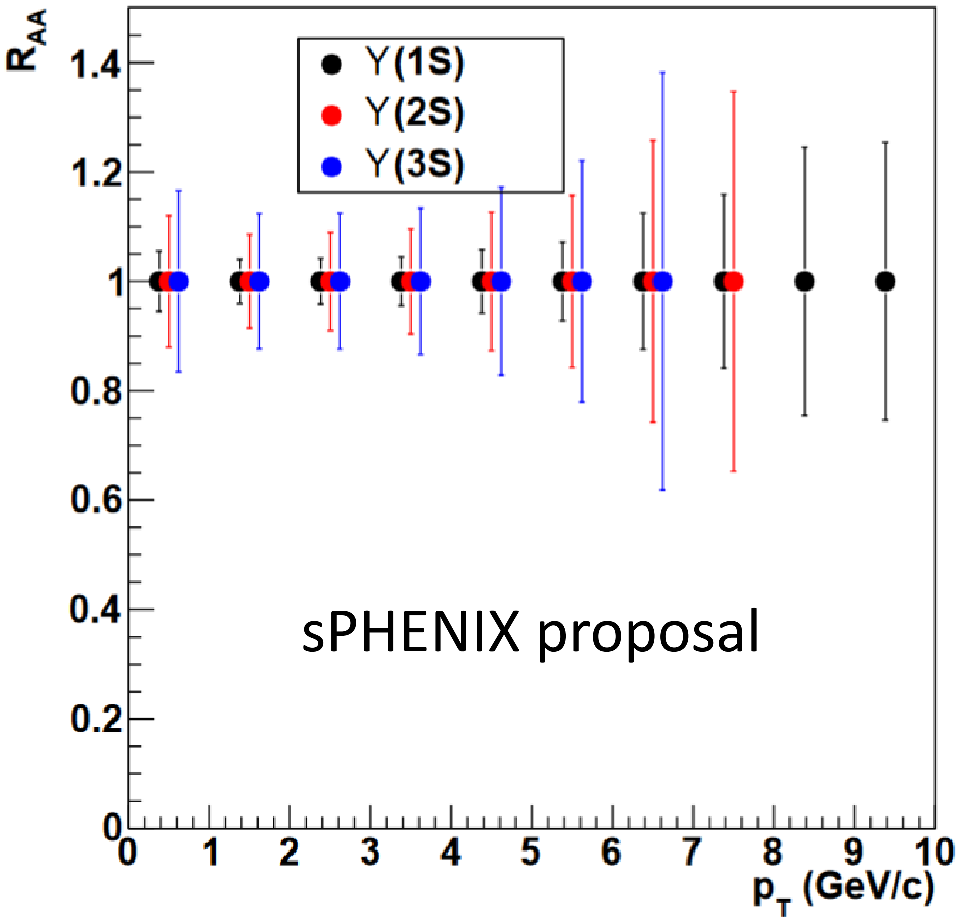
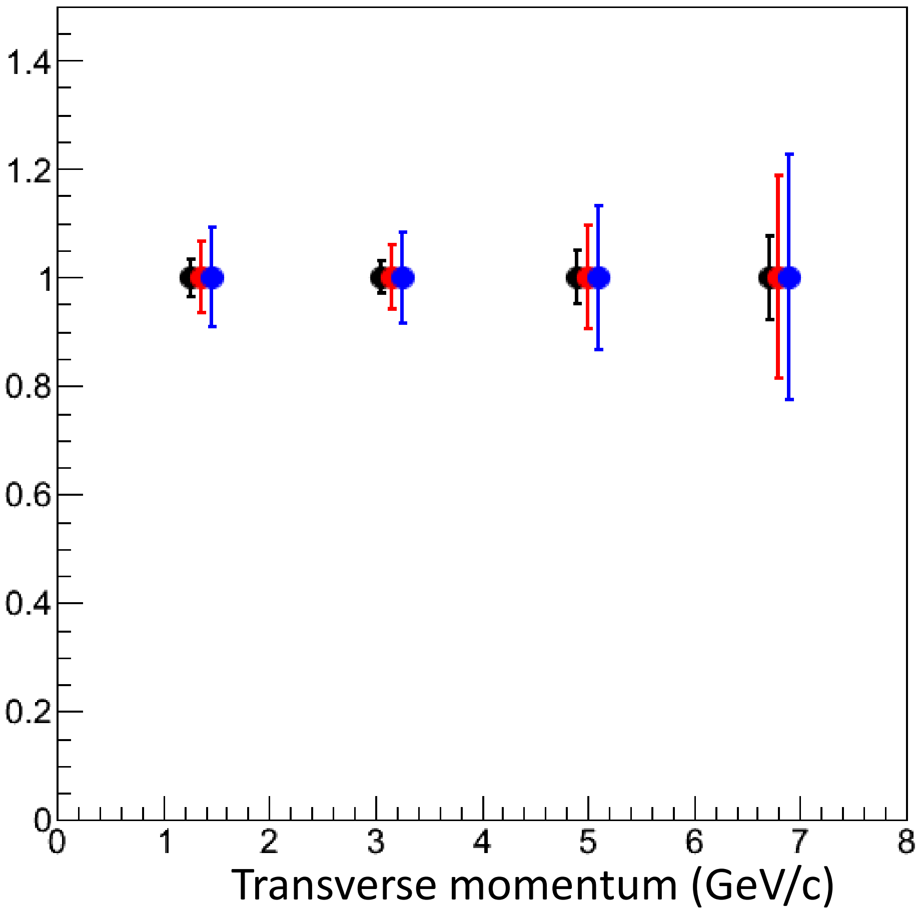
Upsilon R_{AA} update

Sasha Lebedev (ISU)

eID efficiency = 70%, no suppression

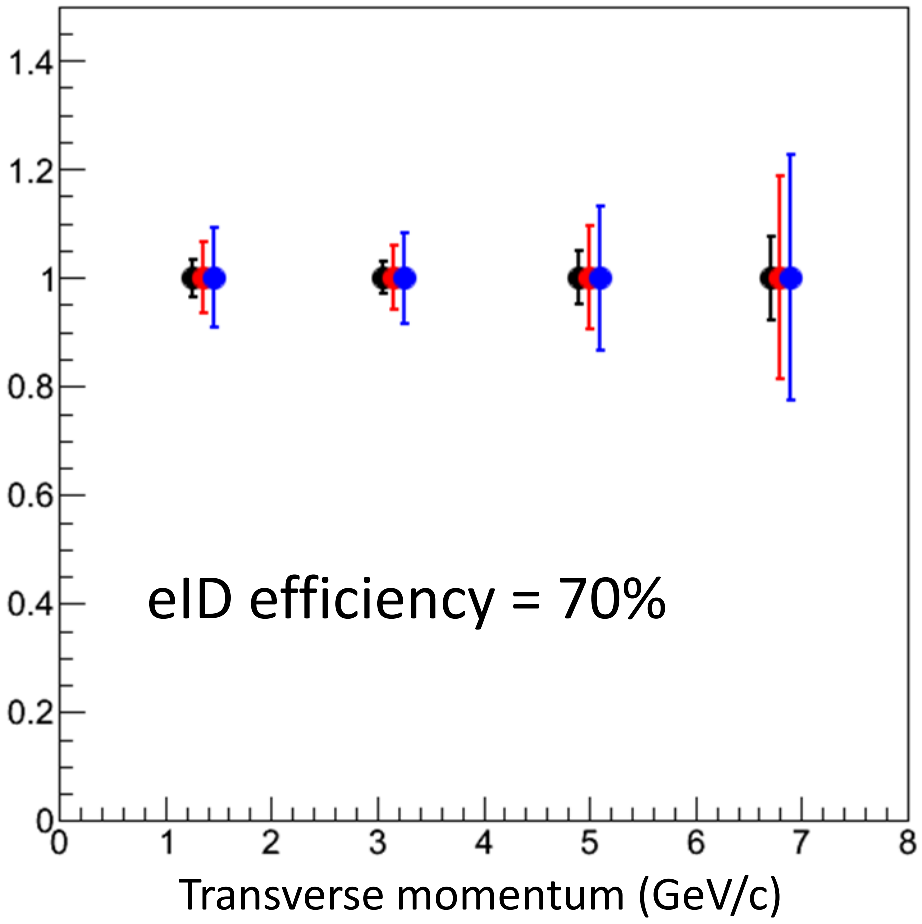
For 70% eID efficiency we have better background now, same number of Upsilons

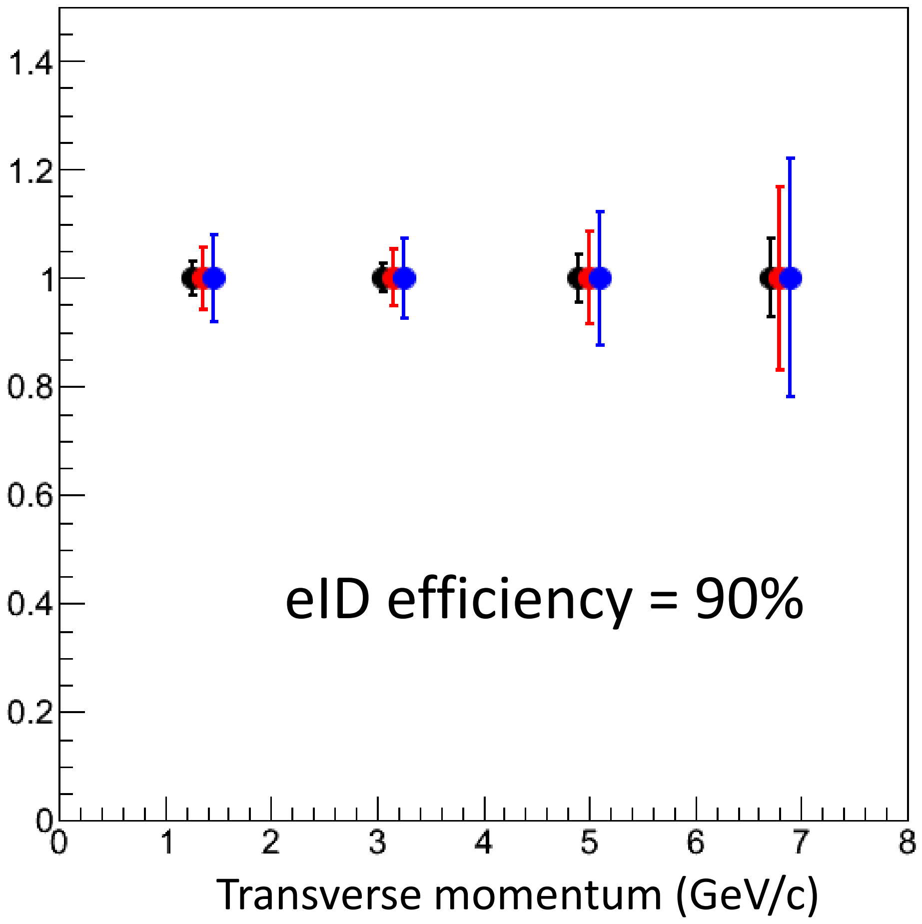




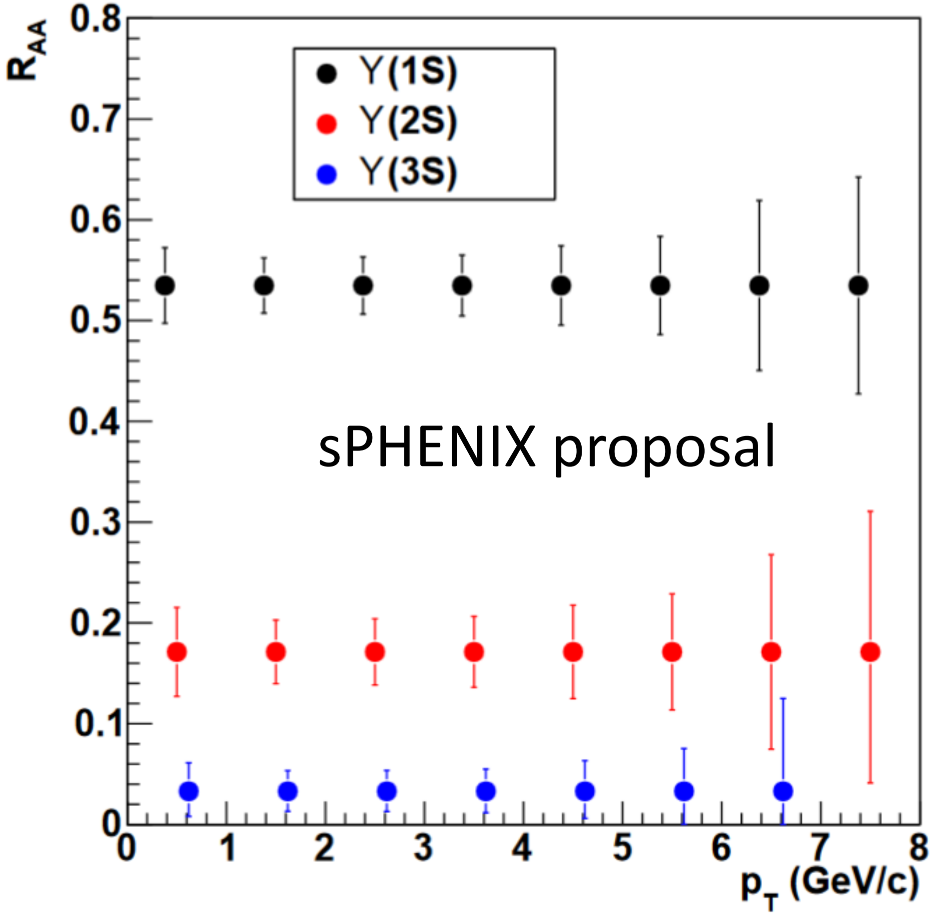
70% vs. 90% eID efficiency

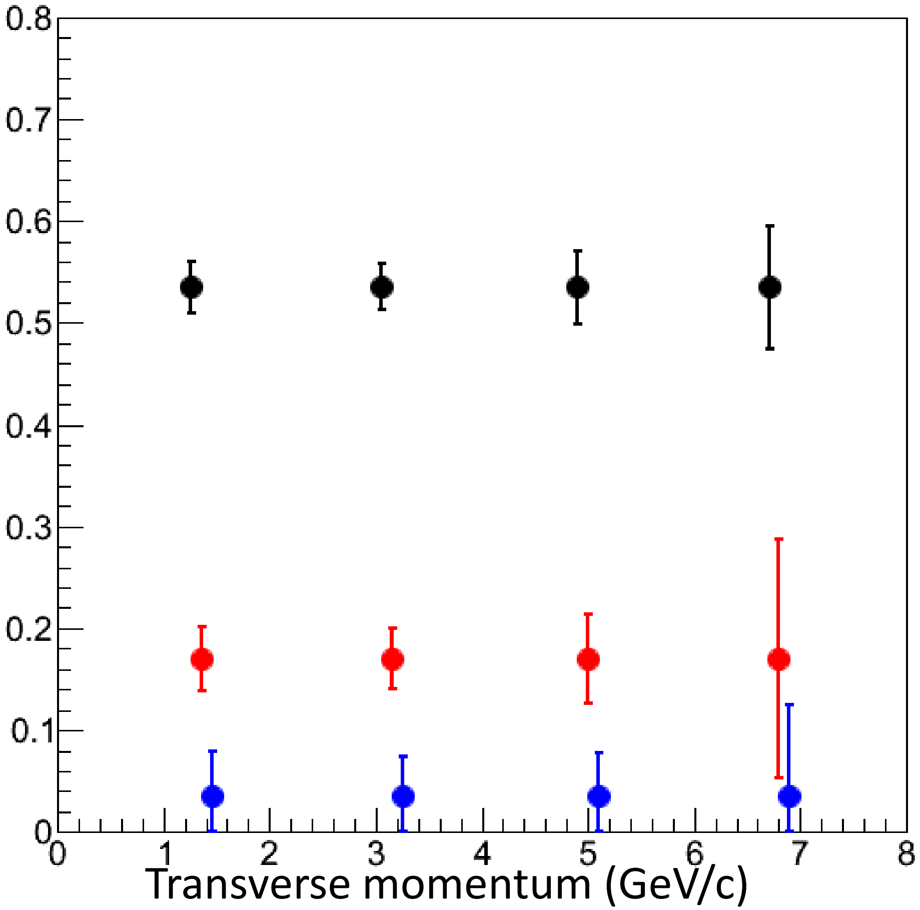
Worse background, but more Upsilons
R_{AA} uncertainty a little better





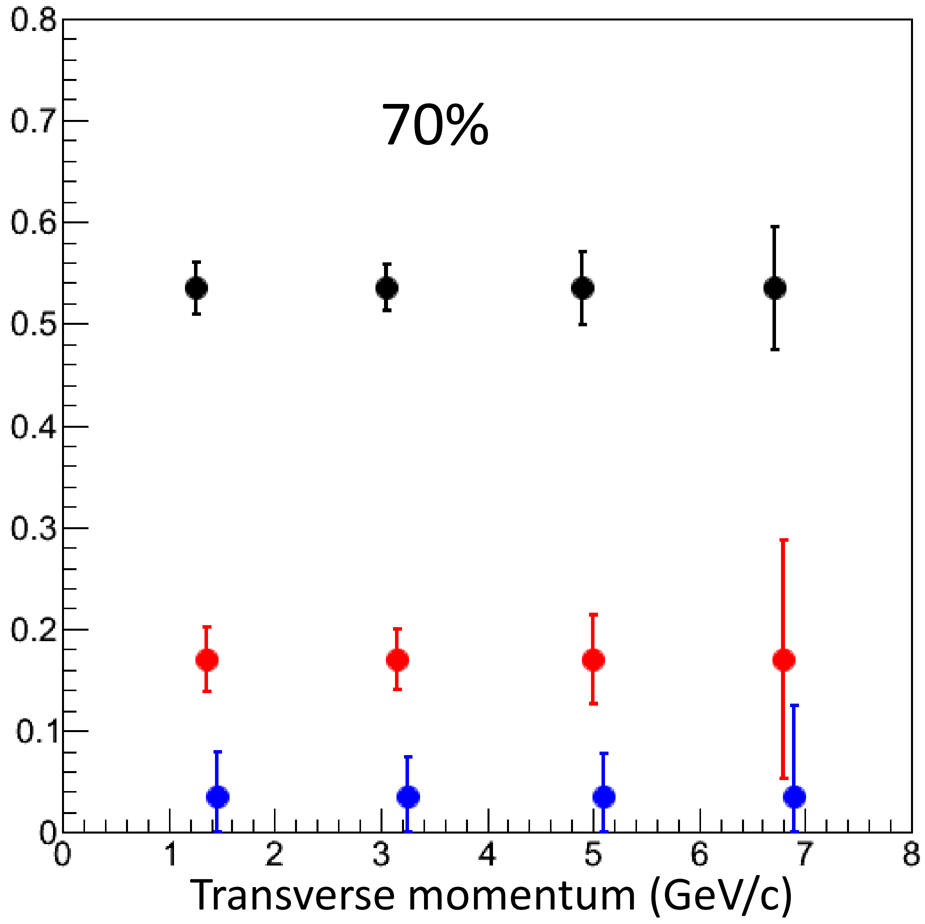
eID efficiency 70%, realistic suppression

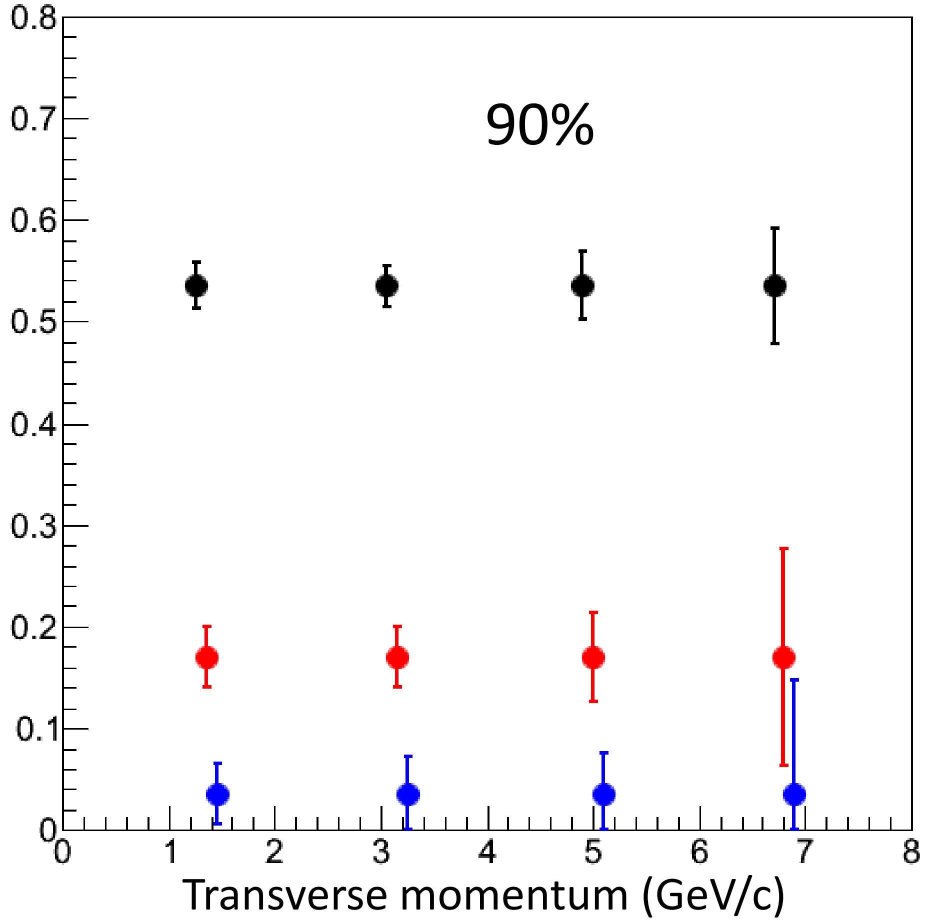




Integrated over p_T number of Υ(3S) = 26 (43 for eID eff. = 90%)

70% vs. 90% eID efficiency, realistic suppression

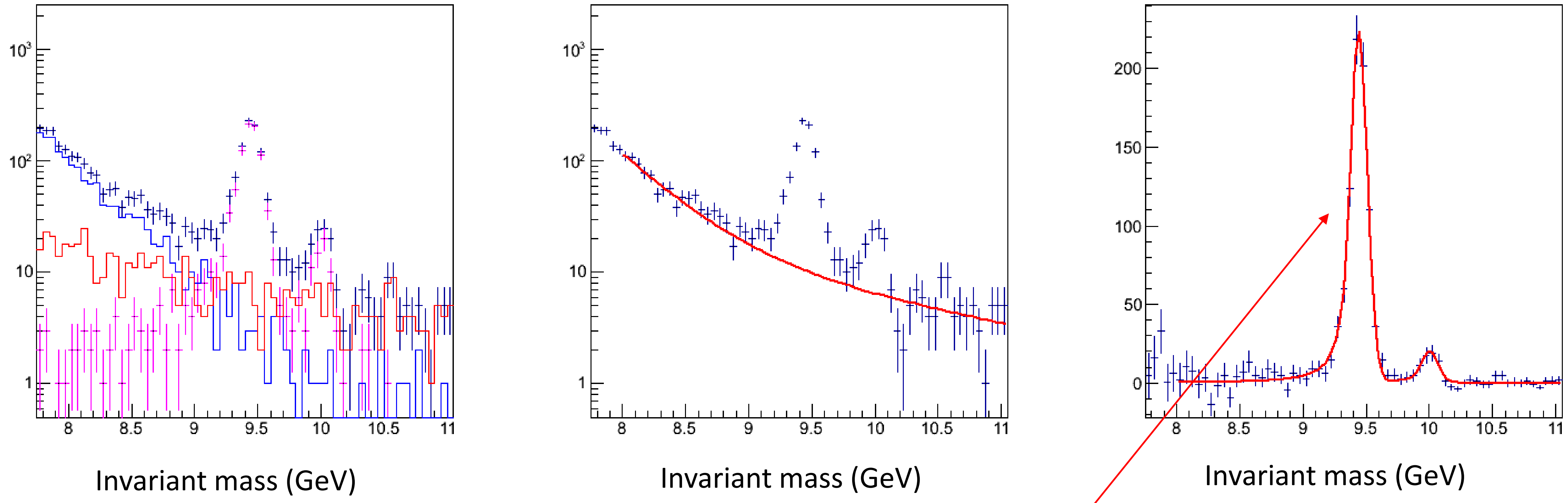




Closer look at invariant mass distributions

Realistic suppression, p_T 0-2 GeV, eID eff. = 70%

Assume that we can calculate infinite number of mixed events, so that subtracting background does not introduce additional stat. error (only systematic).

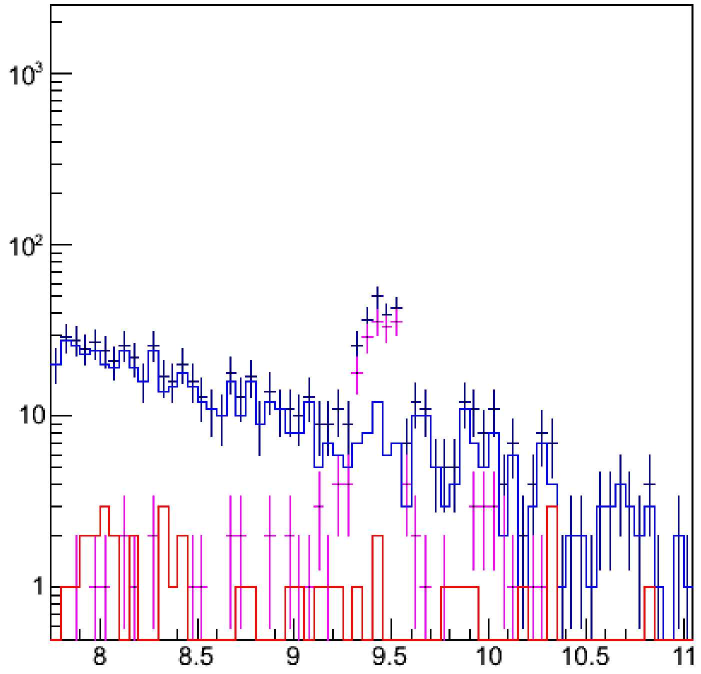


Blue: combinatorial background

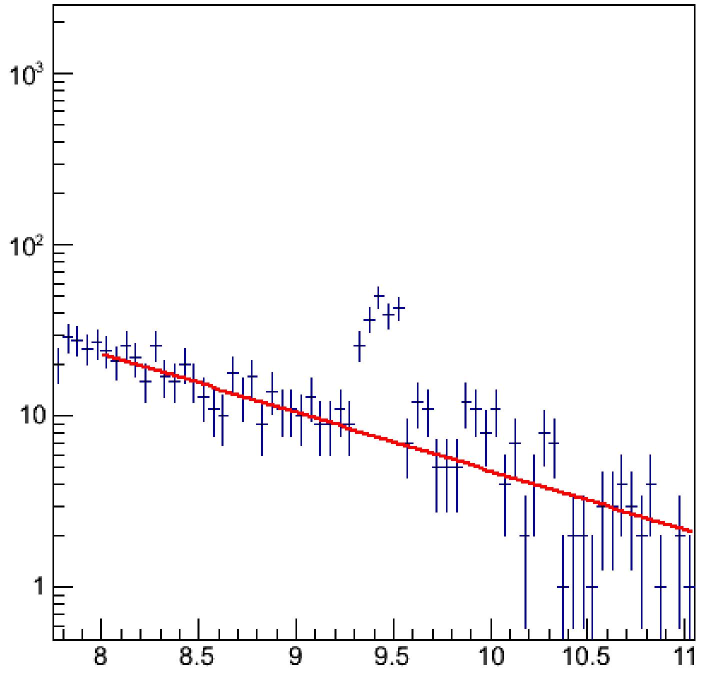
Red: correlated background

Fit with triple Crystal Ball function

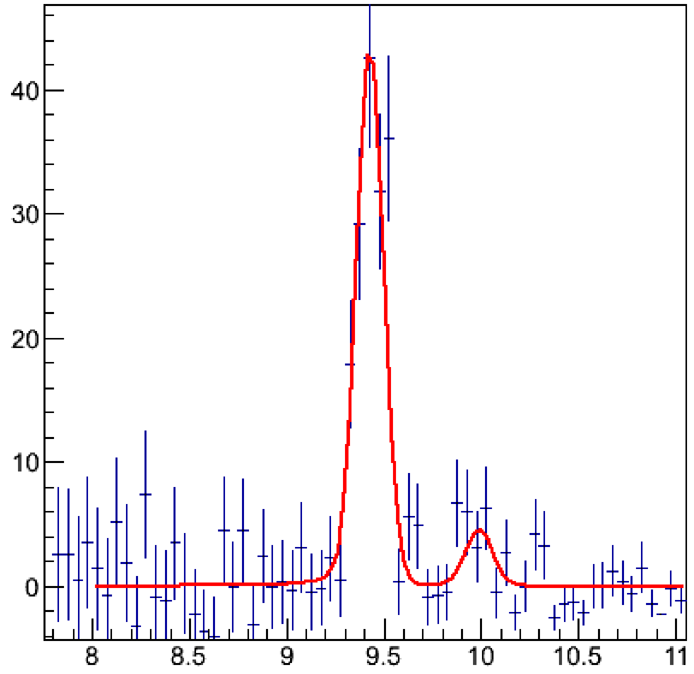
p_T = 6-10 GeV; eID eff = 70%; realistic suppression



Invariant mass (GeV)



Invariant mass (GeV)



Invariant mass (GeV)

Some conclusions

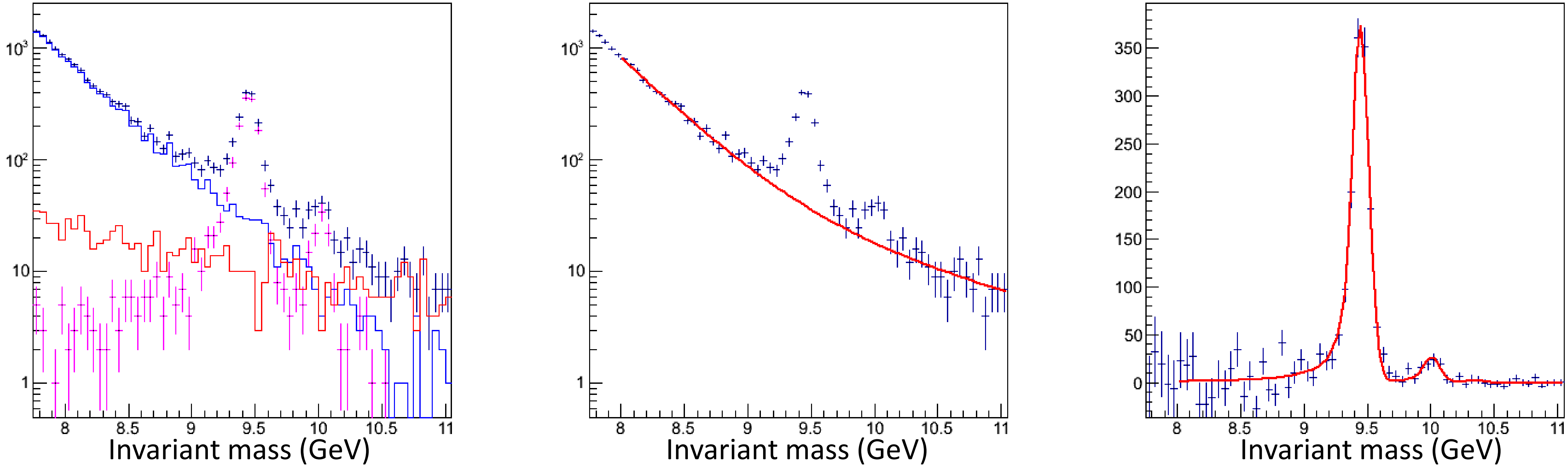
For Υ(1S) and Υ(2S) R_{AA} is now better than in sPHENIX proposal, but worse for Υ(3S).

Maybe using Crystal Ball fit to extract the yield will help?

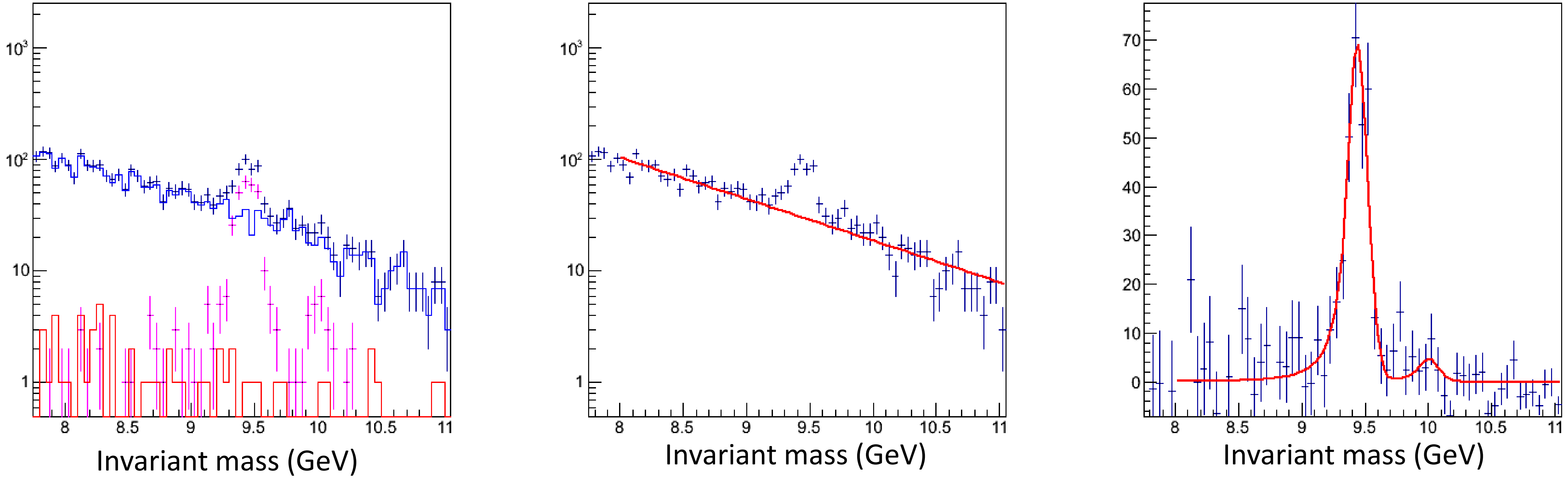
The problem is how to propagate uncertainty of the fit parameters to the integral.

Backup Slides

p_T = 0-2 GeV; eID eff = 90%; realistic suppression



p_T = 6-10 GeV/c; eID eff. = 90%; realistic suppression



all p_T; realistic suppression